# THE PLANT DISEASE REPORTER

Issued By

Division of Mycology and Disease Survey

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Volume XXIII Number 15

August 15, 1939

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE PLANT DISEASE REPORTER

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THE PLANT DISEASE SURVEY

DIVISION OF MYCOLOGY AND DISEASE SURVEY

Volume XXIII August 15, 1939 Number 15

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Fruit infection with apple rust in Illinois is worse than it has ever been noticed to be before, according to H. W. Anderson, page 258. Unusual occurrences of apple and quince rust in New York are reported by J. G. Goodrich and W. J. Clark. H. W. Anderson reports marked increase of apple blotch in Illinois during the past year. X disease of peach spreads much more rapidly than yellows in Massachusetts, according to O. C. Boyd. A note in Wisconsin Horticulture mentions occurrence of strawberry red stele in Wisconsin and Michigan.

John T. Middleton and C. M. Tucker report definite identification of spotted wilt on tomatoes in Missouri, page 259.

The occurrence in New York of bacterial ring rot of potato is reported by H. S. Cunningham, page 261.

Reports on diseases of vegetable crops, page 261, include tomato bacterial canker and a form of fertilizer injury in Massachusetts, by O. C. Boyd; cabbage yellows in New York, by several reporters in different parts of the State; destructive occurrence of fusarium wilt of spinach on Long Island, by Orson S. Cannon; fusarium wilt of potatoes in Massachusetts, by O. C. Boyd; halo blight and alternaria spot of Lima beans on Long Island, by H. S. Cunningham; salt injury to celery and other crops on a Massachusetts farm that was flooded during the hurricane of last year, by O. C. Boyd; and celery diseases in New York, by A. G. Newhall.

S. Diachun and W. D. Valleau contribute a note on poor growth of corn following lespedeza in Kentucky, page 263. The cause has not been determined.

A correction, page 264.

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## RED SUTURE DISEASE OF PEACH REPORTED FROM MARYLAND

E. A. Walker

A peach disease condition with fruit and leaf symptoms similar to red suture disease [caused by a virus] has been found on three adjacent Belle of Georgia trees in one Western Maryland orchard near Smithsburg, Washington County. The disease is characterized by a reddening of the suture on the fruit, which becomes extremely soft and watery about 3 days prior to the normal ripening date for the variety. The leaves are somewhat twisted, wrinkled, and smaller than normal. They hang down and cluster about the stem on shortened internodes. The color of the leaves gives the tree a bronzed appearance. The peculiar diseased trees were first observed by the writer on July 16, 1939.

Other varieties in this orchard are suspected of having this disease, and these will be observed at proper intervals during the ripening season for characteristic symptoms. The grower reports this disease existent in his plantings for the past several years, and that such affected trees have been removed from the orchard following the removal of the crop. An attempt will be made to trace the history of this disease in Maryland orchards.

The red suture disease of peach has heretofore been reported only from Michigan, where it has been studied carefully by Mr. Don Cation of Michigan State College. Mr. Cation visited the affected orchard in Maryland on August 5 while making a tour of the Eastern States in the interest of yellow-red virosis ("X-disease") and other peach virus diseases, and made the diagnosis of the disease in Maryland. Budding has been made from the diseased onto healthy peach trees for confirmation of the original diagnosis.

(University of Maryland, Extension Service).

## PEACH LEAF CURL IN ILLINOIS IN 1939

G. H. Boewe

The data in the accompanying table, which show the incidence of peach leaf curl, Taphrina deformans, in Illinois in 1939, were obtained from the examination of 96 peach plantings in 24 counties in the southern half of the State. They were obtained at various times during the 5 weeks from April 25 to May 26. The disease had developed to full epidemic proportions at the time the data were taken. In this connection it is interesting to note that leaf curl reached its full development 2 weeks later than in 1938. No leaf curl was detected, even on unsprayed trees, at an earlier inspection on April 10.

As is usually the case, the disease was either absent or present in very small amounts in those orchards in which dormant sprays had been applied for leaf curl. Three exceptions should be noted. In 2 of the 3 plantings in Cumberland County only one-half of the trees were sprayed; in orchard No. 1 in Massac County the spray was applied after the buds had started to open; and in orchard No. 1 in Perry County a barrel sprayer was used.

As in 1938, there was considerable variation in the amount of leaf curl that developed in orchards known to have had no dormant spray. There appears to be no adequate explanation for the absence of leaf curl, or for the very light infections found, in certain unsprayed plantings. Orchard No. 5 in Jackson County has had no spray for several years; No. 4 in Johnson County is a seedling tree and gets no spray; No. 2 in Marion County has had no spray for several years; No. 4, a 4-year old planting, received only an oil spray; and No. 6 in Massac County and Nos. 4 and 5 in Saline County have had no spray for 2 years.

Incidence of leaf curl, Taphrina deformans, on peach in Illinois, 1939.

| County | Control used | Number of trees in orchard | Percentage of trees with infection | Percentage of leaves infected on diseased trees | Average percentage of leaves diseased in orchard |
|---|---|---|---|---|---|
| Bond | Oil - Bordeaux | 200 | 0.0 | 0.0 | 0.0 |
| | Oil - Bordeaux | 350 | 0.0 | 0.0 | 0.0 |
| | Oil - Bordeaux | 500 | 0.0 | 0.0 | 0.0 |
| | None | 1 | 100.0 | 81.0 | 81.0 |
| Christian | None | 40 | 100.0 | 35.1 | 35.1 |
| Clay | Oil - Bordeaux | 750 | 0.0 | 0.0 | 0.0 |
| | Oil - Bordeaux | 200 | 0.0 | 0.0 | 0.0 |
| | Oil - Bordeaux | 1,000 | 0.0 | 0.0 | 0.0 |
| | None | 400 | 0.0 | 0.0 | 0.0 |
| | Oil - Bordeaux | 1,000 | 0.0 | 0.0 | 0.0 |
| | Oil - Bordeaux | 1,200 | 0.0 | 0.0 | 0.0 |
| | None | 125 | 100.0 | 1.6 | 1.6 |
| | Oil - Bordeaux | 400 | 0.0 | 0.0 | 0.0 |
| | Oil - Bordeaux | 1,200 | 0.0 | 0.0 | 0.0 |
| Cumberland | Wettable sulfur and zinc sulfate | 200 | 100.0 | 1.1 | 1.1 |
| | Wettable sulfur and zinc sulfate | 750 | 100.0 | 6.65 | 6.65 |
| | Wettable sulfur and zinc sulfate | 750 | 100.0 | 2.95 | 2.95 |

| County | Control used | Number of trees in orchard | Percentage of trees with infection | Percentage of leaves infected on diseased trees | Average percentage of leaves diseased in orchard |
|---|---|---|---|---|---|
| Edwards | Oil - Bordeaux | 45 | 100.0 | 0.55 | 0.55 |
| | Oil - Bordeaux | 65 | 100.0 | 1.8 | 1.8 |
| | Oil - Bordeaux | 45 | 100.0 | 1.75 | 1.75 |
| Effingham | Not determined | 1,000 | 100.0 | 9.9 | 9.9 |
| | Not determined | 600 | 100.0 | 24.7 | 24.7 |
| Fayette | Not determined | 25 | 100.0 | 65.2 | 65.2 |
| | Not determined | 10 | 100.0 | 19.7 | 19.7 |
| | Not determined | 500 | 0.0 | 0.0 | 0.0 |
| | Not determined | 100 | 100.0 | 7.2 | 7.2 |
| | Not determined | 300 | 100.0 | 3.0 | 3.0 |
| Franklin | Not determined | 250 | 100.0 | 26.6 | 26.6 |
| | Oil - Bordeaux | 250 | 5.0 | T | T |
| | Oil - Bordeaux | 2,000 | 0.0 | 0.0 | 0.0 |
| Gallatin | Not determined | 800 | 100.0 | 25.3 | 25.3 |
| Jackson | None | 50 | 90.0 | 0.8 | 0.72 |
| | Oil - Bordeaux | 100 | 0.0 | 0.0 | 0.0 |
| | Oil - Bordeaux | 2,000 | 65.7 | T | T |
| | Kind not known | 300 | 0.0 | 0.0 | 0.0 |
| | None | 63 | 90.0 | 0.4 | 0.36 |
| | None | 250 | 0.0 | 0.0 | 0.0 |
| Jefferson | Not determined | 1,800 | 85.0 | 0.4 | 0.34 |
| | Not determined | 2,000 | 0.0 | 0.0 | 0.0 |
| | Not determined | 300 | 0.0 | 0.0 | 0.0 |
| | Lime sulfur | 2,500 | 0.0 | 0.0 | 0.0 |
| | Oil - Bordeaux | 3,500 | 0.0 | 0.0 | 0.0 |
| Johnson | Not determined | 100 | 100.0 | 35.1 | 35.1 |
| | Oil Bordeaux | 2,000 | 0.0 | 0.0 | 0.0 |
| | Oil Bordeaux | 150 | 0.0 | 0.0 | 0.0 |
| | None | 1 | 100.0 | 48.7 | 48.7 |
| | None - oil only | 2,000 | 5.0 | T | T |
| | Oil - Bordeaux | 400 | 0.0 | 0.0 | 0.0 |
| Macon | Not determined | 5 | 100.0 | 27.8 | 27.8 |
| Madison | Lime sulfur | 25 | 50.0 | 2.7 | 1.35 |
| | Lime sulfur | 20 | 0.0 | 0.0 | 0.0 |
| | Lime sulfur | 12 | 0.0 | 0.0 | 0.0 |
| | Lime sulfur | 15 | 0.0 | 0.0 | 0.0 |

| County | Control used | Number of trees in orchard | Percentage of trees with infection | Percentage of leaves infected on diseased trees | Average percentage of leaves diseased in orchard |
|---|---|---|---|---|---|
| Marion | Oil - Bordeaux | 1,500 | 0.0 | 0.0 | 0.0 |
| | None | 15 | 100.0 | 10.9 | 10.9 |
| | Not determined | 50 | 100.0 | 3.1 | 3.1 |
| | None | 500 | 60.0 | 0.1 | 0.06 |
| Massac | Oil - Bordeaux | 400 | 80.0 | 1.1 | 0.88 |
| | Oil - Bordeaux | 400 | 0.0 | 0.0 | 0.0 |
| | Oil - Bordeaux | 4,000 | 0.0 | 0.0 | 0.0 |
| | None | 400 | 100.0 | 33.1 | 33.1 |
| | Lime sulfur | 300 | 94.0 | 1.7 | 1.6 |
| | None | 290 | 100.0 | 31.2 | 31.2 |
| Perry | Oil - Bordeaux | 30 | 100.0 | 3.3 | 3.3 |
| | Oil - Bordeaux | 500 | 0.0 | 0.0 | 0.0 |
| | Oil - Bordeaux | 500 | 0.0 | 0.0 | 0.0 |
| | Oil - Bordeaux | 1,000 | 0.0 | 0.0 | 0.0 |
| | Not determined | 100 | 100.0 | 3.4 | 3.4 |
| Pulaski | Not determined | 50 | 100.0 | 1.4 | 1.4 |
| | Oil - Bordeaux | 50 | 0.0 | 0.0 | 0.0 |
| | Oil - Bordeaux | 40 | 0.0 | 0.0 | 0.0 |
| | Oil - Bordeaux | 2,000 | 0.0 | 0.0 | 0.0 |
| | Oil - Bordeaux | 400 | 0.0 | 0.0 | 0.0 |
| | None | 7 | 100.0 | 5.0 | 5.0 |
| | None | 1 | 100.0 | 11.67 | 11.67 |
| | Lime sulfur | 150 | 0.0 | 0.0 | 0.0 |
| Richland | Lime sulfur | 5 | 0.0 | 0.0 | 0.0 |
| St. Clair | Oil - Bordeaux | 60 | 0.0 | 0.0 | 0.0 |
| | Oil - Bordeaux | 375 | 0.0 | 0.0 | 0.0 |
| Saline | None | 30 | 10.0 | T | T |
| | None | 70 | 15.0 | T | T |
| | None | 30 | 95.0 | T | T |
| | None | 275 | 98.0 | 1.6 | 1.57 |
| | None | 90 | 100.0 | 1.1 | 1.1 |
| Union | Oil - Bordeaux | 300 | 0.0 | 0.0 | 0.0 |
| | Oil - Bordeaux | 400 | 0.0 | 0.0 | 0.0 |
| | Not determined | 250 | 0.0 | 0.0 | 0.0 |
| | Not determined | 100 | 100.0 | 4.2 | 4.2 |
| | Not determined | 24 | 100.0 | 8.6 | 8.6 |
| | Oil - Bordeaux | 1,100 | 100.0 | 8.2 | 8.2 |

| County | Control used | Number of trees in orchard | Percentage of trees with infection | Percentage of leaves infected on diseased trees | Average percentage of leaves diseased in orchard |
|---|---|---|---|---|---|
| White | None | 13 | 100.0 | 41.0 | 41.0 |
| | Not determined | 10 | 100.0 | 16.3 | 16.3 |
| | Not determined | 2,500 | 90.0 | T | T |
| | Not determined | 80 | 100.0 | 28.5 | 28.5 |
| Williamson | Not determined | 25 | 100.0 | 24.9 | 24.9 |
| | Not determined | 600 | 0.0 | 0.0 | 0.0 |

(Illinois State Natural History Survey).

## SOME REPORTS ON DISEASES OF FRUIT CROPS

APPLE RUST ON FRUIT IN ILLINOIS: A peculiar reversal of rust infection [Gymnosporangium juniperi-virginianae] has occurred this season in southern Illinois. Ordinarily, leaf infection predominates and infected fruits are rarely found. Jonathan and Wealthy are usually the varieties most severely infected.

In the present season the leaf rust is not especially abundant, while fruit infection is much worse than has ever been noticed. Furthermore, the varieties attacked include a much wider range than in former years. In addition to Wealthy and Jonathan, such varieties as Duchess (Oldenburg), Transparent, Kinnard, and Delicious show fruit infection.

Cedar galls were more abundant than for the past four or five years. There has been a gradual build-up since 1936, when a very dry year reduced cedar tree infection to a minimum. (H. W. Anderson, June 10. University of Illinois).

UNUSUAL OCCURRENCES OF CEDAR RUSTS IN NEW YORK: Apple Rust in Niagara County: I noted a case of apple rust on Wealthy apple leaves, the first I have ever observed in this county. (J. G. Goodrich. July 31).

Quince Rust in Rockland County: During the week of June 26 I found the first quince rust [G. clavipes] infection on apples, the first I have been able to find in four seasons in Rockland County. (W. J. Clark. July 10).

(From Weekly News Letter for dates indicated).

APPLE BLOTCH IN ILLINOIS: Blotch [Phyllosticta solitaria] was observed in Calhoun County (western Illinois) on Duchess fruit on May 31. It was observed in southern Illinois on May 25, but was not found on May 10. At Urbana, the lesions were well advanced by June 8.

Apple blotch has not recovered from the dry seasons of 1934 and 1936, but there has been a marked increase during the past year. Young bearing orchards are relatively free of blotch but older orchards, where old cankers are present, are showing a decided increase of infection. (H. W. Anderson, June 10. University of Illinois).

PEACH VIROSES IN MASSACHUSETTS: The X disease appeared to develop considerably later in peaches this year than in chokecherries. It was readily discernible in the cherry by June 20 to 25, whereas symptoms were not well defined in peaches until July 10 to 20. Recent surveys indicate definitely more of the disease in the southern than in the northern part of the State. In each instance where the peach trees appeared to be free from X disease, it was not possible to locate diseased chokecherries nearby. In all instances of diseased orchards infected chokecherries were present. The disease appears to progress much more rapidly in young orchards than in older trees.

Peach yellows is present as usual in some orchards, totally absent in others. Even where it is of long standing, the rate of spread appears to be slow indeed as compared with that for X disease. (O. C. Boyd, July 26. Massachusetts State College).

RED STELE OF STRAWBERRY REPORTED FROM WISCONSIN: Under the caption, "A New Strawberry Disease Found in Wisconsin," a brief note in Wisconsin Horticulture (29: 288. July - August, 1939) reports the discovery of red stele [Phytophthora sp.] in a planting in Douglas County, by H. E. Halliday, a State nursery inspector. Identification was verified by members of the U. S. Bureau of Plant Industry. The article states that the disease was apparently introduced into this planting with a shipment of plants from a Michigan nursery last spring.

## SPOTTED WILT ON TOMATOES IN MISSOURI

John T. Middleton and C. M. Tucker

In a recent issue of the Plant Disease Reporter (23: 204, July 1) it was indicated that the occurrence of spotted wilt on tomatoes in Missouri had not been definitely established, though the virus was presumably present. In the course of the last 2 weeks spotted wilt has been found in 3 tomato plots near Columbia. Typical blighting of plants with a bronzing of the foliage and some streaking of the stem was noted

in most cases. In all cases infected leaves exhibited necrotic spots with concentric delineations. In a few instances typical fruit spotting was observed.

Field counts in the tomato varieties experimental plot revealed a 90 to 95 percent infection. The varieties listed are all susceptible to the spotted wilt virus:

| | |
|---|---|
| Greater Baltimore | Marglobe |
| Early Baltimore | Avon Early |
| Indiana Baltimore | Pritchard |
| New Stone | Master Marglobe |
| Improved New Stone | Rutgers |
| Valiant | Prairiana |
| Marhio | Illinois Pride |
| Bonny Best | Penn State |
| Clark's Special C | Landreth's |
| Gulf State Market | Grothen's Red Globe |
| Brown's Special | Glovel |
| Scarlet Dawn | Break o'Day |

Field counts made in the experimental plots for development of tomatoes resistant to fusarium wilt revealed some interesting facts. Two accessions of the red currant tomato (Lycopersicum pimpinellifolium) were entirely free of spotted wilt, while varieties of L. esculentum planted on either side of the disease-free plants were attacked and showed typical spotted wilt symptoms. It was also interesting to note that hybrid tomatoes with red currant parentage that were liable to field inoculation showed a measurable degree of resistance to spotted wilt.

Specimens of diseased tomatoes were sent to Professor M. W. Gardner, University of California, Berkeley, who confirmed the writers' opinion that the disease is spotted wilt.

In addition to the striking difference in susceptibility to spotted wilt in the red currant and common tomato, a difference in susceptibility to common mosaic was noted. One accession of the red currant tomato was completely free of mosaic, while another accession, commercial, was quite susceptible.

(University of Missouri).

## BACTERIAL RING ROT OF POTATO IN NEW YORK

H. S. Cunningham

Bacterial wilt and soft rot of potatoes [Bacterium sepedonicum] has been found in several fields in Suffolk County, Long Island. Since the plants were dead before the trouble was reported the disease has been identified from infected tubers. At the time of writing (August 9) it has been found in fields planted with North Dakota, Prince Edward Island, and Maine stocks.

(Long Island Research Station, Riverhead).

## REPORTS ON DISEASES OF VEGETABLE CROPS

BACTERIAL CANKER OF TOMATOES AND FERTILIZER INJURY IN MASSACHUSETTS: A moderately severe case of bacterial canker [Aplanobacter michiganense] was observed in Hampden County on July 25. At least 25 percent of the plants showed definite symptoms, about 5 percent had already died, and probably the total loss will be at least 15 percent. The plants were raised in the grower's own sash house from locally purchased seed.

A form of fertilizer injury is causing loss of about 20 percent of one small field in Northampton and a loss of perhaps 5 percent in a nearby second field. Injured plants exhibit all stages of wilting from slight to severe with complete death of plants. Each affected plant is girdled by a dry canker just below the soil line. The root and the stem above the canker are normal. When the plants were about 10 or 12 inches high, the grower of the first field applied a band of "fish" (meal) around the base of each plant and then banked soil over it without mixing it in. The second field was similarly treated except that the "fish" was not covered with soil. Apparently, covering the material with soil rendered it more toxic to the stem than leaving it exposed on the surface. (O. C. Boyd, July 26. Massachusetts State College).

CABBAGE YELLOWS IN NEW YORK: "Yellows has been reported in some resistant strains grown on Long Island, in Nassau County," according to Orson S. Cannon. "This is in keeping with the results of tests last year, which showed that some resistant strains were more than 20 percent susceptible to yellows. --The disease is causing rather heavy losses of non-resistant cabbage in fields where the soil is infested with Fusarium conglutinans." (June 12 and June 19). R. A. Boehlecke reported (July 24) that in Ontario County "Yellows has appeared in many fields

because of setting out diseased plants from seed beds this year. Also, newly infested fields are showing up." Spread to new fields is reported from Monroe and Niagara Counties also, and occurrence of the disease in Wayne County.

FUSARIUM WILT OF SPINACH DESCTRUCTIVE ON LONG ISLAND: July 3 -- Spinach wilt, caused by a species of Fusarium, is causing the death of as much as 75 percent of the spinach in some fields in Nassau County, where the crop has been grown on the same land year after year. In other plantings, losses range from a trace to as high as 50 percent. August 7 -- Wilt continues to be very destructive and probably 50 percent of the spinach sown in the last month has been killed by this disease. (Orson S. Cannon, Weekly News Letter for dates indicated).

FUSARIUM WILT OF POTATOES IN MASSACHUSETTS: Fusarium wilt is showing up very plainly this month wherever present. No doubt the dry weather is favorable for development of symptoms. One field of Irish Cobblers in Hampshire County recently showed about 5 percent of the plants wilted. The seed stock was certified potatoes. However, potatoes have been grown in that field for several years. (O. C. Boyd, July 26. Massachusetts State College).

HALO BLIGHT AND ALTERNARIA SPOT OF LIMA BEANS ON LONG ISLAND: Halo blight [Bacterium medicaginis phaseolicola] has been common in Lima bean plantings on Long Island this season and has also been found on snap beans. In severe cases the plants have been badly dwarfed and in addition to the leaf spotting considerable pod injury has been found during a period of foggy weather.

In one planting of Lima beans considerable leaf spotting has been found which has been found to be due to a species of Alternaria. No pod spotting was found to occur in the field. (H. S. Cunningham, August 19. Long Island Research Station, Riverhead).

SALT INJURY TO CELERY AND OTHER CROPS IN MASSACHUSETTS: On a farm in Westport that was flooded during the hurricane of September 1938, both yellow and Pascal celery were backward and definitely injured by the salt residue, and were heavily infected with late blight [Septoria spp.]. A small amount of early blight [Cercospora apii] too was present. Yet, the grower had sprayed weekly and thoroughly as in former years, and rarely experiences loss from those diseases. Incidentally, other crops on the same farm, including lettuce, cucumbers, peppers, spinach and carrots, showed moderate to severe injury. Cabbage appeared to grow rather well. Newly seeded millet was dying, the injury resembling damping-off. (O. C. Boyd, July 26. Massachusetts State College).

CELERY DISEASES IN NEW YORK: Both bacterial blight (Phytomonas jaggeri) and cercospora blight were observed in Wayne County, July 20, in plantings where a blighted crop was harvested last year. Mosaic is much more prevalent than usual in several counties where insufficient rainfall has permitted aphid populations to build up on celery. Early symptoms of fusarium yellows [Fusarium apii] can be found in a few places where Michigan Golden has not been used on infested soil. (A. G. Newhall, Weekly News Letter, July 31).

## POOR GROWTH OF CORN FOLLOWING LESPEDEZA

S. Diachun and W. D. Valleau

During June and the first part of July 1939, several complaints were received from 6 counties in central and northern Kentucky regarding corn fields in which the plants turned yellow soon after germination and either died or made slow growth. Three fields were inspected, and plants were examined from 5 more. In addition, in 2 afternoons at least 20 fields were seen which closely resembled the fields inspected, in that the corn was irregular. Sometimes spotted fields were recognized from a distance of a half mile in which patches of the field appeared barren, but these patches proved to have stunted, yellow plants.

One farmer reported that he had replanted a 25-acre field because more than 75 percent of the plants were small and yellow, or dead. Four other farmers felt that their crops would be practically failures unless something stimulated growth, for by the first of July the poor corn was only a foot or so high while normal corn in the same or nearby fields was shoulder high. In one field observed June 15 (corn planted first of May) more than 20 percent of the plants were dead or missing, and 90 percent of the remainder were yellow and small. This field was striking because of the presence of small, scattered patches of 50 or 60 hills in which the plants were uniform, green, vigorous, and 24 to 30 inches tall, while those in the rest of the field were yellow, stunted and less than 12 inches tall.

In general, the plants looked normal until they were 3 or 4 inches tall. Then they turned yellow, the outer leaves became brown and dry, and some of the plants died. Older plants were less chlorotic, but were stunted, some of the outer leaves were dead and dry, and often veins and the edges of leaves were purple. The plants appeared to be suffering from some toxic substance. There was a close resemblance to the injury caused by Penicillium oxalicum.[1]

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[1] Johann, H., J. R. Holbert, and J. G. Dickson. Further studies on Penicillium injury to corn. Jour. Agr. Res. 43: 757-790. 1931.

Although the mesocotyl and some of the root ends were collapsed or "pinched", microscopic examination of cleared roots failed to show any fungus constantly associated with these collapsed areas. In some instances some of the roots were gnawed by larvae of Colasbis brunnea. But in general the root system did not seem injured enough to be causing the slow toxic growth.

Penicillium was almost always present on the kernels of the small plants, and on the mesocotyls and base of roots of dead or dying plants. In the 8 fields from which plants were examined the corn had been preceded by Korean lespedeza; in most of these the straw had been left in the field. Because of the wet spring the land was plowed late. After planting the soil became dry. There was little rain in May. Unrotted straw was present in the soil in June. On one farm a part of the corn field had been in lespedeza last year and part in corn. The small yellow plants were confined to that part of the field following lespedeza. In another field stunting followed lespedeza, but not potatoes. However, two growers reported normal corn following Korean lespedeza, but both had taken pains to plow the lespedeza straw deep underground. Invariably the farmers felt that the poorest corn was on the best part of the field.

Limited experiments have not as yet given any information as to the cause of the slow growth. Corn kernels inoculated with 29 isolates of Penicillium isolated from kernels and mesocotyls of stunted plants failed to produce disease in the greenhouse when the kernels were planted in steamed soil. Addition of lespedeza straw to soil in pots in the greenhouse or to soil in the field has not produced the disease. Plants grown in soil taken from fields where plants were poor were yellow and smaller than checks in good soil. Since these plants were grown in 4-inch pots the possibility of starvation is not eliminated.

(Kentucky Agricultural Experiment Station).

## A CORRECTION

The cause of tobacco downy mildew was given as Peronospora nicotianae on page 233 of the preceding issue, instead of P. tabacina as it should be, of course.

## JULY WEATHER

(From U. S. Dept. Agr. Weather Bureau, Weekly Weather and Crop Bulletin for week ending August 8).

The weather in July was characterized by about-normal warmth east of the Mississippi River, abnormally high temperatures between the Mississippi River and Rocky Mountains, and moderately above normal to the westward. Precipitation was scanty over large areas. Virginia and parts

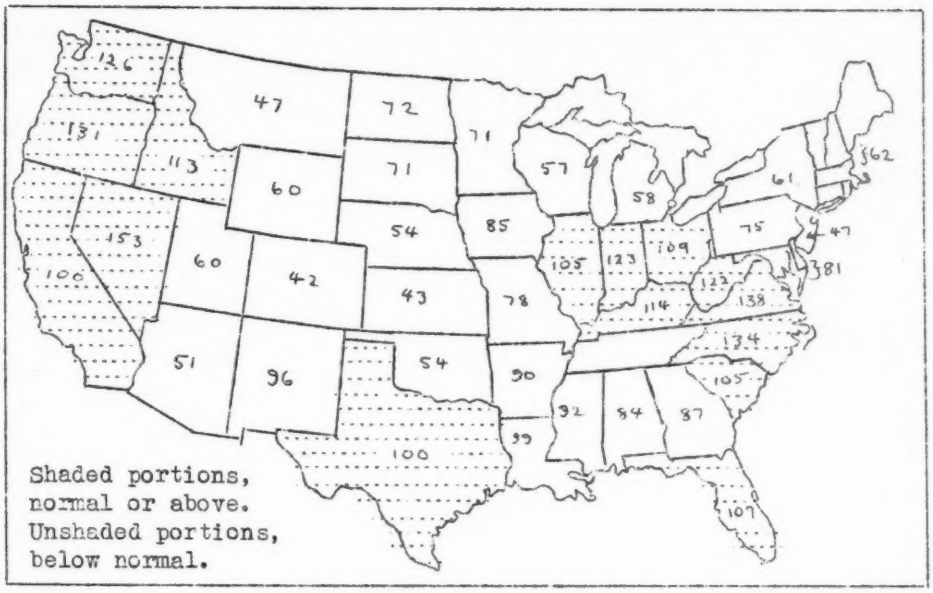


Figure 1. Percentage of normal precipitation, by States, July 1939.

of the adjoining States had mean monthly temperatures of 1° to 2° below normal, but elsewhere there was a general tendency to above-normal temperatures, with plus departures ranging from 4° to 8° from western Arkansas, Oklahoma, and northwestern Texas northward. In this area temperatures were persistently high throughout nearly the entire month.
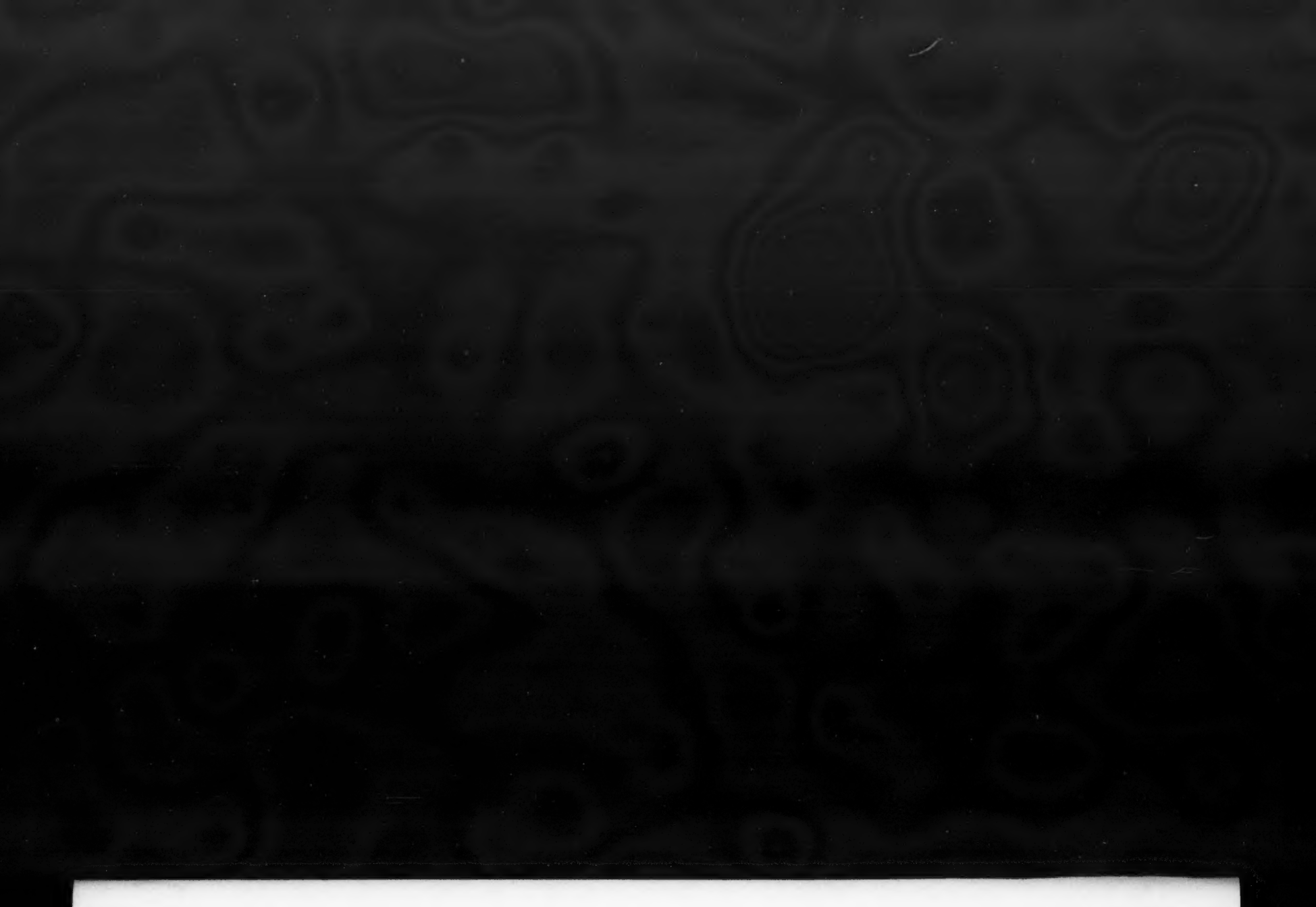
Figure 1 shows the percentage of normal rainfall by States. From the Mississippi River to and including the Rocky Mountain States the amounts were deficient, decidedly so in the Great Plains and the eastern foothills of the Rockies. Some inter-State localities in this area had less than 10 percent of the monthly normal and the State averages were less than half the normal in some cases. Also, in the Northeast the amounts were decidedly scanty, with some of the local areas having only about 10 percent of normal. The Ohio Valley had above normal, as did most of the South Atlantic States and also much of the far West.